In the Claims:

Please amend claims 100 and 116 as indicated below.

1. (Withdrawn) A peer computing system comprising:

a plurality of peer nodes operable to couple to a network;

wherein the plurality of peer nodes are configured to implement a peer-to-peer environment on the network according to a peer-to-peer platform comprising:

a core layer comprising one or more peer-to-peer platform protocols for enabling the plurality of peer nodes to discover each other, communicate with each other, and cooperate with each other to form peer groups and share content in the peer-to-peer environment;

a service layer comprising one or more core services each provided by one or more of the plurality of peer nodes in the peer-to-peer environment, wherein at least a subset of the core services are operable to be used by the plurality of peer nodes in forming and participating in the peer groups, and wherein each of the one or more core services are configured to be accessed by the plurality of peer nodes in accordance with at least one of the one or more peer-to-peer platform protocols; and

an application layer comprising one or more applications each provided by one or more of the plurality of peer nodes in the peer-to-peer environment, wherein each of the one or more applications are configured to be accessed in accordance with at least one of the

one or more peer-to-peer platform protocols, and wherein at least a subset of the one or more applications are each configured to access at least one of the one or more core services to perform application tasks in the peer-to-peer environment in accordance with at least one of the one or more peer-to-peer platform protocols.

2. (Withdrawn) The peer computing system as recited in claim 1, wherein the service layer further comprises one or more other services that are not core services in the peer-to-peer environment.

3. (Withdrawn) The peer computing system as recited in claim 1, wherein each of the one or more peer-to-peer platform protocols defines one or more advertisement formats for describing and publishing advertisements for resources in the peer-to-peer environment.

4. (Withdrawn) The peer computing system as recited in claim 3, wherein the resources include one or more of the peer nodes, the peer groups, the content, the core services, other services in the service layer, the applications, pipes, and pipe endpoints, wherein the pipes are communications channels between one or more of the peer nodes, the core services, the other services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

5. (Withdrawn) The peer computing system as recited in claim 1, wherein at least a subset of the one or more peer-to-peer platform protocols defines one or more message formats configured for use in exchanging messages between the peer nodes in accordance with the particular protocol.

6. (Withdrawn) The peer computing system as recited in claim 1, wherein the one or more peer-to-peer platform protocols includes one or more of:

a peer discovery protocol for discovering resources in the peer-to-peer environment;

a peer membership protocol for use by the peer nodes in applying for membership in the peer groups;

a peer resolver protocol for use in sending search queries from one peer group member to another peer group member;

a peer information protocol for enabling the peer nodes to obtain information about capabilities and status of other peer nodes in the peer-to-peer environment;

a pipe binding protocol for use in finding the physical location of pipe endpoints and binding the pipe endpoints, wherein pipes are communications channels between one or more of the peer nodes, the core services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels;

an endpoint routing protocol for enabling the peer nodes to request peer routing information to reach the other peer nodes; and

a peer rendezvous protocol for enabling peer nodes to propagate query messages to a next set of peer nodes.

7. (Withdrawn) The peer computing system as recited in claim 6, wherein the resources include one or more of the peer nodes, the peer groups, the content, the core services, other services in the service layer, the applications, pipes, and pipe endpoints, wherein the pipes are communications channels between one or more of the peer nodes,

the core services, the other services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

8. (Withdrawn) The peer computing system as recited in claim 1, wherein the one or more peer-to-peer platform protocols includes a discovery protocol for discovering the peer nodes in the peer-to-peer environment.

9. (Withdrawn) The peer computing system as recited in claim 8, wherein the one or more peer-to-peer platform protocols define a peer advertisement format configured for use in advertising the peer nodes in the peer-to-peer environment, wherein said discovering the peer nodes returns one or more peer advertisements for the discovered peer nodes formatted in accordance with the peer advertisement format.

10. (Withdrawn) The peer computing system as recited in claim 1, wherein the one or more peer-to-peer platform protocols includes a discovery protocol for discovering the peer groups in the peer-to-peer environment.

11. (Withdrawn) The peer computing system as recited in claim 10, wherein the one or more peer-to-peer platform protocols define a peer group advertisement format configured for use in advertising the peer groups in the peer-to-peer environment, wherein said discovering the peer groups returns one or more peer group advertisements formatted in accordance with the peer group advertisement format.

12. (Withdrawn) The peer computing system as recited in claim 1, wherein the one or more peer-to-peer platform protocols includes a discovery protocol for enabling the peer nodes to discover and exchange content in the peer-to-peer environment.

13. (Withdrawn) The peer computing system as recited in claim 12, wherein the one or more peer-to-peer platform protocols define a content advertisement format configured for use in advertising the content in the peer-to-peer environment, wherein

said discovering content returns one or more content advertisements formatted in accordance with the content advertisement format.

14. (Withdrawn) The peer computing system as recited in claim 1, wherein the one or more peer-to-peer platform protocols include a discovery protocol for discovering pipes in the peer-to-peer environment, wherein the pipes are communications channels between one or more of the peer nodes, the core services and the applications in the peer-to-peer environment.

15. (Withdrawn) The peer computing system as recited in claim 14, wherein the one or more peer-to-peer platform protocols define a pipe advertisement format configured for use in advertising pipes in the peer-to-peer environment, wherein said discovering pipes returns one or more pipe advertisements formatted in accordance with the pipe advertisement format.

16. (Withdrawn) The peer computing system as recited in claim 1, wherein the one or more peer-to-peer platform protocols include a discovery protocol for discovering pipe endpoints in the peer-to-peer environment, wherein the pipes are communications channels between one or more of the peer nodes, the core services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

17. (Withdrawn) The peer computing system as recited in claim 16, wherein the one or more peer-to-peer platform protocols define an endpoint advertisement format configured for use in advertising endpoints in the peer-to-peer environment, wherein said discovering endpoints returns one or more endpoint advertisements formatted in accordance with the endpoint advertisement format.

18. (Withdrawn) The peer computing system as recited in claim 1, wherein the one or more peer-to-peer platform protocols includes a discovery protocol for discovering

the core services and other services provided by the peer nodes in the peer-to-peer environment.

19. (Withdrawn) The peer computing system as recited in claim 18, wherein the one or more peer-to-peer platform protocols define a service advertisement format configured for use in advertising the core services and the other services provided by the peer nodes in the peer-to-peer environment, wherein said discovering the core services and the other services returns one or more service advertisements formatted in accordance with the service advertisement format.

20. (Withdrawn) The peer computing system as recited in claim 1, wherein the one or more peer-to-peer platform protocols includes a peer membership protocol for use by the peer nodes in applying for membership in one or more of the peer groups.

21. (Withdrawn) The peer computing system as recited in claim 1, wherein the one or more peer-to-peer platform protocols include a peer resolver protocol for use in sending generic search queries from one peer node to one or more other peer nodes in the peer-to-peer environment.

22. (Withdrawn) The peer computing system as recited in claim 21, wherein the search queries are sent to one or more services configured to perform searches as specified by the search queries and to generate responses to the search queries, wherein the one or more services are each hosted by one of the one or more other peer nodes.

23. (Withdrawn) The peer computing system as recited in claim 22, wherein each of the one or more services is configured to find one or more of peer, peer group, content, service, application, pipe, and pipe endpoint information in accordance with each particular search query received by the particular service handler, wherein the pipes are communications channels between one or more of the peer nodes, the core services, other services in the service layer, and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured

to be bound to the pipes to establish the communications channels.

24. (Withdrawn) The peer computing system as recited in claim 1, wherein the one or more peer-to-peer platform protocols include a pipe binding protocol for use in finding the physical location of a pipe endpoint and in binding to the pipe endpoint, wherein pipes are communications channels between one or more of the peer nodes, the core services, other services in the service layer, and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

25. (Withdrawn) The peer computing system as recited in claim 1, wherein the one or more peer-to-peer platform protocols include an endpoint routing protocol for enabling the peer nodes to request peer routing information to reach other peer nodes.

26. (Withdrawn) The peer computing system as recited in claim 25, wherein, in said requesting peer routing information, the peer nodes are configured to use the endpoint routing protocol to send route query request messages formatted in accordance with the endpoint routing protocol to one or more router peers to request the peer routing information.

27. (Withdrawn) The peer computing system as recited in claim 26, wherein each of the router peers is configured to cache route information for one or more routes in the peer-to-peer environment, and wherein each of the router peers is further configured to return route information for a particular route specified by a particular route query request message if the route information for the particular route is cached by the particular router peer.

28. (Withdrawn) The peer computing system as recited in claim 27, wherein each of the router peers is further configured to forward the route query request message to other router peers if the route information for the particular route is not cached by the particular router peer.

29. (Withdrawn) The peer computing system as recited in claim 1, wherein the one or more peer-to-peer platform protocols includes a peer information protocol for enabling the peer nodes to obtain information about capabilities and status of other peer nodes in the peer-to-peer environment.

30. (Withdrawn) The peer computing system as recited in claim 1, wherein each peer group is a collection of cooperating member peer nodes that provides a common set of services to the member peer nodes in the peer-to-peer environment.

31. (Withdrawn) The peer computing system as recited in claim 30, wherein the common set of services on at least a subset of the peer groups includes one or more of a discovery service, a membership service, an access service, a pipe service, a resolver service and a monitoring service, wherein pipes are communications channels between one or more of the peer nodes, the core services, other services in the service layer, and the applications in the peer-to-peer environment.

32. (Withdrawn) The peer computing system as recited in claim 30, wherein the peer-to-peer platform protocols include a discovery protocol, wherein the common set of services on at least a subset of the peer groups includes a discovery service for use by member peer nodes in said peer group to discover advertised resources including peer nodes and peer groups in the peer computing system in accordance with the discovery protocol.

33. (Withdrawn) The peer computing system as recited in claim 30, wherein the peer-to-peer platform protocols include a membership protocol, wherein the common set of services on at least a subset of the peer groups includes a membership service for use by member peer nodes in said peer group to reject or accept group membership applications in accordance with the membership protocol.

34. (Withdrawn) The peer computing system as recited in claim 30, wherein the

common set of services includes one or more user-defined services.

35. (Withdrawn) The peer computing system as recited in claim 1, wherein each of the plurality of peer nodes includes a unique identifier configured for use in distinguishing each peer node from the other peer nodes in the peer-to-peer environment.

36. (Withdrawn) A peer node comprising:

one or more network interfaces for coupling to a network;

a memory comprising program instructions, wherein the program instructions are executable within the peer node to implement, according to a peer-to-peer platform:

a core layer comprising one or more peer-to-peer platform protocols for enabling the peer node to discover other peer nodes, communicate with the other peer nodes, and cooperate with the other peer nodes to form peer groups and share content in a peer-to-peer environment on the network;

a service layer comprising one or more core services in the peer-to-peer environment, wherein at least a subset of the core services are operable to be used by the peer node and the other peer nodes in forming and participating in the peer groups, and wherein each of the one or more core services are configured to be accessed in accordance with at least one of the one or more peer-to-peer platform protocols; and

an application layer comprising one or more applications, wherein each of the one or more applications are configured to be accessed by the

peer node and the other peer nodes in accordance with at least one of the one or more peer-to-peer platform protocols, and wherein at least a subset of the one or more applications are each configured to access at least one of the one or more core services to perform application tasks in the peer-to-peer environment in accordance with at least one of the one or more peer-to-peer platform protocols.

37. (Withdrawn) The peer node as recited in claim 36, wherein the service layer further comprises one or more other services that are not core services in the peer-to-peer environment.

38. (Withdrawn) The peer node as recited in claim 36, wherein the program instructions are further executable to host one or more services in a peer group in which the peer node is a member peer, wherein other member peer nodes access the hosted services from the peer node.

39. (Withdrawn) The peer node as recited in claim 36, wherein the program instructions are further executable to publish advertisements for resources in the peer-to-peer environment using one or more advertisement formats defined by the peer-to-peer platform protocols, wherein the resources include one or more of the peer nodes, the peer groups, content, the core services, other services in the services layer, the applications, pipes and pipe endpoints, wherein the pipes are communications channels between one or more of the peer nodes, the core services, the other services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

40. (Withdrawn) The peer node as recited in claim 36, wherein the program instructions are further executable to send messages to and receive messages from the other peer nodes in the peer-to-peer environment using one or more message formats

each defined by one of the one or more peer-to-peer platform protocols.

41. (Withdrawn) The peer node as recited in claim 36, wherein the one or more peer-to-peer platform protocols includes one or more of:

a peer discovery protocol for use by the peer node in discovering resources in the peer-to-peer environment, wherein the resources include one or more of the peer nodes, the peer groups, content, services, pipes and pipe endpoints;

a peer membership protocol for use by the peer node in applying for membership in the peer groups;

a peer resolver protocol for use in sending search queries from the peer node to other peer nodes in the peer-to-peer environment;

a peer information protocol for enabling the peer node to obtain information about capabilities and status of the other peer nodes;

a pipe binding protocol for use by the peer node in finding the physical location of pipe endpoints and binding the pipe endpoints, wherein pipes are communications channels between one or more of the peer nodes, the core services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels;

an endpoint routing protocol for enabling the peer node to request peer routing information to reach one or more of the other peer nodes in the peer-to-peer environment; and

a peer rendezvous protocol for enabling peer nodes to propagate query messages to a next set of peer nodes.

42. (Withdrawn) The peer node as recited in claim 36, wherein the one or more peer-to-peer platform protocols includes a discovery protocol, wherein the program instructions are further executable to discover resources in the peer-to-peer environment in accordance with the discovery protocol, wherein, in said discovering the resources, the program instructions are further executable to receive one or more advertisements for the discovered resources formatted in accordance with the discovery protocol.

43. (Withdrawn) The peer node as recited in claim 42, wherein the resources include one or more of the peer nodes, the peer groups, the content, the core services, other services in the service layer, the applications, pipes, and pipe endpoints, wherein the pipes are communications channels between one or more of the peer nodes, the core services, the other services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

44. (Withdrawn) The peer node as recited in claim 36, wherein the one or more peer-to-peer platform protocols includes a peer membership protocol, wherein the program instructions are further executable to apply for membership in one or more of the peer groups in accordance with the peer membership protocol.

45. (Withdrawn) The peer node as recited in claim 36, wherein the one or more peer-to-peer platform protocols includes a peer resolver protocol, wherein the program instructions are further executable to send generic search queries to one or more of the other peer nodes in accordance with the peer resolver protocol.

46. (Withdrawn) The peer node as recited in claim 36, wherein the one or more peer-to-peer platform protocols include a pipe binding protocol, wherein pipes are communications channels between one or more of the peer nodes, the core services, other

services in the service layer, and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels, and wherein the program instructions are further executable to:

find the physical location of a pipe endpoint in accordance with the pipe binding protocol; and

bind to the pipe endpoint in accordance with the pipe binding protocol.

47. (Withdrawn) The peer node as recited in claim 36, wherein the one or more peer-to-peer platform protocols include an endpoint routing protocol, wherein the program instructions are further executable to request peer routing information to the other peer nodes in the peer-to-peer environment in accordance with the endpoint routing protocol.

48. (Withdrawn) The peer node as recited in claim 36, wherein the one or more peer-to-peer platform protocols includes a peer information protocol, wherein the program instructions are further executable to obtain information about capabilities and status of the other peer nodes in the peer-to-peer environment in accordance with the peer information protocol.

49. (Withdrawn) The peer node as recited in claim 36, wherein the peer node is a member peer node in a peer group, wherein the peer group is a collection of cooperating member peer nodes that provides a common set of services to the member peer nodes.

50. (Withdrawn) The peer node as recited in claim 49, wherein the peer-to-peer platform protocols include a discovery protocol, wherein the common set of services provided by the peer group includes a discovery service, wherein the program instructions are further executable to discover advertised resources including the other peer nodes and the peer groups in the peer-to-peer environment using the discovery

service in accordance with the discovery protocol.

51. (Withdrawn) The peer node as recited in claim 49, wherein the peer-to-peer platform protocols include a membership protocol, wherein the common set of services includes a membership service, wherein the program instructions are further executable to reject or accept group membership applications using the membership service in accordance with the membership protocol.

52. (Withdrawn) The peer node as recited in claim 36, wherein the peer node includes a unique identifier configured to distinguish the peer node from the other peer nodes in the peer-to-peer environment

53. (Original) A peer node comprising:

one or more network interfaces for coupling to a network;

a memory comprising program instructions, wherein the program instructions are executable within the peer node to discover and access an instance of a service on one of a plurality of peer nodes, wherein the one of the plurality of peer nodes is local to a network location of the peer node on the network, wherein the plurality of peer nodes each host an instance of the same service, and wherein said discovering and accessing the instance of the service are performed in accordance with one or more peer-to-peer platform protocols;

wherein the peer node is configured to move from the network location to a different network location;

wherein the program instructions are further executable within the peer node to discover and access a different instance of the service on a different one of

the plurality of peer nodes, wherein the different one of the plurality of peer nodes is local to the different network location, and wherein said discovering and accessing the different instance of the service are performed in accordance with the one or more peer-to-peer platform protocols.

54. (Original) The peer node as recited in claim 53, wherein the peer node includes a unique identifier of the peer node, wherein the unique identifier distinguishes the peer node from the other peer nodes on the network, wherein the program instructions are further executable to provide the unique identifier to the different instance of the service, and wherein the different instance of the service is operable to recognize the peer node using the unique identifier and to route information to the peer node at the different network location.

55. (Original) A peer computing system comprising:

a plurality of peer nodes, wherein the plurality of peer nodes each implement one or more peer-to-peer platform protocols for enabling the plurality of peer nodes to host and access services in a peer-to-peer environment;

at least a subset of the plurality of peer nodes that each host an instance of a service;

wherein each of the at least a subset of the plurality of peer nodes is operable to provide access to an instance of the service hosted by the particular peer node to a different one of the plurality of peer nodes at a network location, wherein the particular peer node is local to the network location;

wherein the different one of the plurality of peer nodes is operable to:

move to a different network location; and

provide a unique identifier to the instance of the service hosted by the particular peer node, wherein the unique identifier distinguishes the different one of the plurality of peer nodes from the other peer nodes on the network;

wherein the instance of the service is operable to recognize the different one of the plurality of peer nodes using the unique identifier and to route information provided by the service to the different one of the plurality of peer nodes at the different network location.

56. (Original) A peer node comprising:

one or more network interfaces for coupling to a network;

a memory comprising program instructions, wherein the program instructions are executable within the peer node to discover and access an instance of a service on one of one or more peer nodes, wherein the one of the one or more peer nodes is local to a network location of the peer node on the network, wherein the one or more peer nodes each host an instance of the same service, and wherein said discovering and accessing the instance of the service are performed in accordance with one or more peer-to-peer platform protocols;

wherein the peer node is configured to move from the network location to a different network location;

wherein the program instructions are further executable within the peer node to:

discover and access the same instance of the service on the one of the one or more peer nodes, wherein said discovering and accessing the same instance of the service are performed in accordance with the one or more peer-to-peer platform protocols;

provide a unique identifier for the peer node to the instance of the service, wherein the unique identifier distinguishes the peer node from the other peer nodes on the network, and wherein the instance of the service is operable to recognize the peer node using the unique identifier and to route information provided by the service to the peer node at the different network location.

57. (Original) A peer computing system comprising:

a plurality of peer nodes, wherein the plurality of peer nodes each implement one or more peer-to-peer platform protocols for enabling the plurality of peer nodes to discover and access contents in a peer-to-peer environment;

at least a subset of the plurality of peer nodes that each include an instance of a content;

wherein each of the plurality of peer nodes is configured to:

discover and access an instance of the content on one of the at least a subset of the plurality of peer nodes, wherein the one of the at least a subset of the plurality of peer nodes is local to a network location of the particular peer node on the network, wherein said discovering and accessing the instance of the content is performed in accordance with the one or more peer-to-peer platform protocols;

move from the network location to a different network location;

discover and access a different instance of the content on a different one of the at least a subset of the plurality of peer nodes, wherein the one of the at least a subset of the plurality of peer nodes is local to the different network location, wherein said discovering and accessing the different instance of the content are performed in accordance with the one or more peer-to-peer platform protocols.

58. (Original) A peer node comprising:

one or more network interfaces for coupling to a network;

a memory comprising program instructions, wherein the program instructions are executable within the peer node to discover and access an instance of a content on one of a plurality of peer nodes, wherein the one of the plurality of peer nodes is local to a network location of the peer node on the network, wherein the plurality of peer nodes each host an instance of the same content, and wherein said discovering and accessing the instance of the service are performed in accordance with one or more peer-to-peer platform protocols;

wherein the peer node is configured to move from the network location to a different network location;

wherein the program instructions are further executable within the peer node to discover and access a different instance of the content on a different one of the plurality of peer nodes, wherein the different one of the plurality of peer nodes is local to the different network location, and wherein said

discovering and accessing the different instance of the content are performed in accordance with the one or more peer-to-peer platform protocols.

59. (Original) A peer computing system comprising:

a plurality of peer nodes operable to couple to a network;

means for the peer nodes to discover each other, communicate with each other, and cooperate with each other to form peer groups and share content in a peer-to-peer environment on the network;

means for the peer nodes to provide, discover and access one or more services in the peer-to-peer environment, wherein at least a subset of the services are core services operable to be used by the plurality of peer nodes in forming and participating in the peer groups; and

means for the peer nodes to provide, discover and access one or more applications in the peer-to-peer environment; and

means for at least a subset of the one or more applications to discover and access at least one of the one or more services to perform application tasks in the peer-to-peer environment.

60. (Original) The peer computing system as recited in claim 59, further comprising means for the one or more services to discover and access each other in the peer-to-peer environment.

61. (Original) The peer computing system as recited in claim 59, further comprising means for describing and publishing resources in the peer-to-peer environment, wherein the resources include one or more of the peer nodes, the peer groups, the content, the services, the applications, pipes, and pipe endpoints, wherein the pipes are communications channels between one or more of the peer nodes, the services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

62. (Original) The peer computing system as recited in claim 59, further comprising means for providing communications channels for the peer nodes, the services and the applications to exchange information in the peer-to-peer environment.

63. (Original) The peer computing system as recited in claim 59, further comprising means for exchanging messages between the peer nodes in the peer-to-peer environment.

64. (Original) The peer computing system as recited in claim 59, further comprising means for discovering resources in the peer-to-peer environment, wherein the resources include one or more of the peer nodes, the peer groups, the content, the services, the applications, pipes and pipe endpoints, wherein the pipes are communications channels between one or more of the peer nodes, the services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

65. (Original) The peer computing system as recited in claim 59, further comprising means for the peer nodes to apply for membership in one or more of the peer groups.

66. (Original) The peer computing system as recited in claim 59, further comprising means for sending generic search queries from one of the peer nodes to one or more other of the peer nodes.

67. (Original) The peer computing system as recited in claim 59, further comprising:

means for finding communications channels between one or more of the peer nodes, the services and the applications in the peer-to-peer environment; and

means for binding to the communications channels.

68. (Original) The peer computing system as recited in claim 59, further comprising means for the peer nodes to request peer routing information to reach other peer nodes in the peer-to-peer environment.

69. (Original) The peer computing system as recited in claim 59, further comprising means for the peer nodes to obtain information about capabilities and status of other peer nodes in the peer-to-peer environment.

70. (Original) The peer computing system as recited in claim 59, wherein the peer groups are collection of cooperating member peer nodes, further comprising means for the peer groups to each provide a common set of services to its member peer nodes.

71. (Original) The peer computing system as recited in claim 59, further comprising means for member peer nodes in a peer group to receive and reject or accept group membership applications.

72. (Original) The peer computing system as recited in claim 59, further comprising means for distinguishing each peer node from the other peer nodes on the network.

73. (Original) A peer computing system comprising:

a plurality of peer nodes configured to couple to a network;

means for the peer nodes to discover each other, communicate with each other, and cooperate with each other to form peer groups and host services in a peer-to-peer environment on the network;

wherein at least a subset of the plurality of peer nodes each hosts an instance of a particular service;

means for each of the plurality of peer nodes to discover and access an instance of a service provided by one of the at least a subset of the plurality of peer nodes, wherein the one of the at least a subset of the plurality of peer nodes is local to a network location of the particular one of the plurality of peer nodes;

wherein each of the plurality of peer nodes is operable to move to a different network location; and

means for each of the plurality of peer nodes to discover and access a different instance of the service provided by a different one of the at least a subset of the plurality of peer nodes, wherein the one of the at least a subset of the plurality of peer nodes is local to the different network location of the particular one of the plurality of peer nodes.

74. (Original) The peer computing system of claim 73, further comprising means for the different instance of the service to recognize the particular one of the plurality of peer nodes and to route information provided by the service to the particular one of the plurality of peer nodes at the different network location.

75. (Original) A peer computing system comprising:

a plurality of peer nodes configured to couple to a network;

means for the peer nodes to discover each other, communicate with each other, and cooperate with each other to form peer groups and host services in a peer-to-peer environment on the network;

wherein at least a subset of the plurality of peer nodes each hosts an instance of a particular service;

means for each of the plurality of peer nodes to discover and access an instance of a service provided by one of the at least a subset of the plurality of peer nodes, wherein the one of the at least a subset of the plurality of peer nodes is local to a network location of the particular one of the plurality of peer nodes;

wherein each of the plurality of peer nodes is operable to move to a different network location;

means for each of the plurality of peer nodes to access the instance of the service provided by the one of the at least a subset of the plurality of peer nodes from the different network location of the particular one of the plurality of peer nodes; and

means for the instance of the service to recognize the particular one of the plurality of peer nodes and to route information provided by the service to the particular one of the plurality of peer nodes at the different network location.

76. (Original) A peer computing system comprising:

a plurality of peer nodes operable to couple to a network;

means for the peer nodes to discover each other, communicate with each other, and cooperate with each other to form peer groups and to share content;

wherein at least a subset of the plurality of peer nodes each hosts an instance of a particular content;

means for each of the plurality of peer nodes to discover and access an instance of a content provided by one of the at least a subset of the plurality of peer nodes, wherein the one of the at least a subset of the plurality of peer nodes is local to a network location of the particular one of the plurality of peer nodes;

wherein each of the plurality of peer nodes is operable to move to a different network location; and

means for each of the plurality of peer nodes to discover and access a different instance of the content provided by a different one of the at least a subset of the plurality of peer nodes, wherein the different one of the at least a subset of the plurality of peer nodes is local to the different network location of the particular one of the plurality of peer nodes.

77. (Withdrawn) A method for implementing a peer-to-peer environment on a network, the method comprising:

a plurality of peer nodes coupled to a network each implementing a core layer of a peer-to-peer platform, wherein the core layer comprises one or more peer-to-peer platform protocols for enabling the plurality of peer nodes to discover each other, communicate with each other, and cooperate with each other to form peer groups and share content in the peer-to-peer environment;

the plurality of peer nodes each implementing a service layer comprising one or more core services each provided by one or more of the plurality of peer nodes in the peer-to-peer environment, wherein each of the one or more core services are configured to be accessed by peer nodes in the peer-to-peer environment in accordance with at least a subset of the one or more peer-to-peer platform protocols;

the plurality of peer nodes each implementing an application layer comprising one or more applications each provided by one or more of the plurality of peer nodes in the peer-to-peer environment, wherein each of the one or more applications are configured to be accessed in accordance with at least one of the one or more peer-to-peer platform protocols, and wherein at least a subset of the one or more applications are each configured to access at least one of the one or more core services to perform application tasks in the peer-to-peer environment in accordance with at least one of the one or more peer-to-peer platform protocols; and

at least a subset of the plurality of peer nodes accessing at least a subset of the core services in accordance with at least one of the one or more peer-to-

peer platform protocols to form one or more peer groups in the peer-to-peer environment.

78. (Withdrawn) The method as recited in claim 77, wherein the one or more peer-to-peer platform protocols include a peer membership protocol for joining or forming a peer group with other peer nodes, wherein the one or more core services include a membership service for use by the peer nodes in forming the peer groups and joining the peer groups, wherein the membership service is configured to be accessed by the peer nodes in the peer-to-peer environment in accordance with the membership protocol, the method further comprising one or more of the plurality of peer nodes forming a peer group in the peer-to-peer environment using the membership service.

79. (Withdrawn) The method as recited in claim 78, further comprising:

another peer node applying for membership in the peer group using the membership service;

one or more member peer nodes of the peer group determining if the other peer node is qualified for membership in the peer group in response to the application for membership using the membership service; and

if the member peer nodes determine that the other peer node is qualified for membership in the peer group, the other peer node becoming a member peer node in the peer group.

80. (Withdrawn) The method as recited in claim 77, wherein the one or more peer-to-peer platform protocols include a discovery protocol for discovering resources in the peer-to-peer environment, and wherein the one or more core services include a discovery service for use by the peer nodes to discover advertised resources in the in the peer-to-peer environment, wherein the discovery service is configured to be accessed by the peer nodes in the peer-to-peer environment in accordance with the discovery protocol.

81. (Withdrawn) The method as recited in claim 80, wherein the advertised resources include one or more of the peer nodes, the peer groups, the content, the core services, other services in the service layer, the applications, pipes, and pipe endpoints, wherein the pipes are communications channels between one or more of the peer nodes, the core services, the other services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

82. (Withdrawn) The method as recited in claim 80, wherein the resources include the peer nodes, the method further comprising:

one of the plurality of peer nodes broadcasting a peer discovery message in the peer-to-peer environment using the discovery service; and

the one of the plurality of peer nodes receiving one or more response messages in response to the peer discovery message, wherein the response messages each include information about a particular peer node, wherein the information is configured for use by the one of the plurality of peer nodes in establishing a connection to the particular peer node; and

wherein the peer discovery message and the one or more response messages are in a format defined by the discovery protocol, and wherein said broadcasting a peer discovery message and said receiving one or more response messages are performed in accordance with the discovery protocol.

83. (Withdrawn) The method as recited in claim 80, wherein the resources include the peer groups, the method further comprising:

one of the plurality of peer nodes broadcasting a peer group discovery message in the peer-to-peer environment using the discovery service; and

the one of the plurality of peer nodes receiving a peer group response message in response to the peer group discovery message from each of one or more of the peer groups in the peer-to-peer environment, wherein the peer group response messages each include information about a particular peer group, wherein the information is configured for use by the one of the plurality of peer nodes in joining the particular peer group; and

wherein the peer group discovery message and the peer group response message are in a format defined by the discovery protocol, and wherein said broadcasting a peer group discovery message and said receiving a peer group response message are performed in accordance with the discovery protocol.

84. (Withdrawn) The method as recited in claim 77, further comprising publishing advertisements for resources in the peer-to-peer environment using one or more advertisement formats each defined by one of the one or more peer-to-peer platform protocols.

85. (Withdrawn) The method as recited in claim 84, wherein the resources include one or more of the peer nodes, the peer groups, the content, the core services, other services in the service layer, the applications, pipes, and pipe endpoints, wherein the pipes are communications channels between one or more of the peer nodes, the core services, the other services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

86. (Withdrawn) The method as recited in claim 77, further comprising two or more of the plurality of peer nodes exchanging messages in the peer-to-peer environment using one or more message formats each defined by one of the one or more peer-to-peer platform protocols.

87. (Withdrawn) The method as recited in claim 77, wherein the one or more peer-to-peer platform protocols include a discovery protocol, the method further comprising a peer node discovering resources in the peer-to-peer environment in accordance with the discovery protocol, wherein said discovering the resources comprises the peer node receiving one or more advertisements for the discovered resources formatted in accordance with the peer discovery protocol.

88. (Withdrawn) The method as recited in claim 87, wherein the resources include one or more of the peer nodes, the peer groups, the content, the core services, other services in the service layer, the applications, pipes, and pipe endpoints, wherein the pipes are communications channels between one or more of the peer nodes, the core services, the other services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

89. (Withdrawn) The method as recited in claim 77, wherein the one or more peer-to-peer platform protocols includes a peer membership protocol, the method further comprising one of the plurality of peer nodes applying for membership in one or more of the peer groups in accordance with the peer membership protocol.

90. (Withdrawn) The method as recited in claim 77, wherein the one or more peer-to-peer platform protocols includes a peer resolver protocol, the method further comprising one of the plurality of peer nodes sending one or more generic search queries to one or more other peer nodes in the peer-to-peer environment in accordance with the peer resolver protocol.

91. (Withdrawn) The method as recited in claim 77, wherein the one or more peer-to-peer platform protocols include a pipe binding protocol, the method further comprising:

one of the plurality of peer nodes finding the physical location of a pipe endpoint in accordance with the pipe binding protocol; and

the peer node binding to the pipe endpoint in accordance with the pipe binding protocol;

wherein pipes are communications channels between one or more of the peer nodes, the core services, other services in the service layer, and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

92. (Withdrawn) The method as recited in claim 77, wherein the one or more peer-to-peer platform protocols include an endpoint routing protocol, the method further comprising one of the plurality of peer nodes requesting peer routing information to other peer nodes in the peer-to-peer environment in accordance with the endpoint routing protocol.

93. (Withdrawn) The method as recited in claim 77, wherein the one or more peer-to-peer platform protocols include a peer information protocol, the method further comprising one of the plurality of peer nodes obtaining information about capabilities and status of one or more other peer nodes in the peer-to-peer environment in accordance with the peer information protocol.

94. (Withdrawn) The method as recited in claim 77, wherein each peer group is a collection of cooperating member peer nodes, further comprising each peer group providing a common set of services to the member peer nodes in the peer-to-peer environment.

95. (Withdrawn) The method as recited in claim 94, wherein the one or more peer-to-peer platform protocols include a discovery protocol, wherein the common set of

services includes a discovery service, wherein the discovery service is accessible in accordance with the discovery protocol, the method further comprising one of the member peer nodes in one of the peer groups discovering advertised resources in the peer-to-peer environment using the discovery service.

96. (Withdrawn) The method as recited in claim 94, wherein the one or more peer-to-peer platform protocols include a membership protocol, wherein the common set of services includes a membership service, wherein the membership service is accessible in accordance with the membership protocol, the method further comprising:

a peer node not in one of the peer groups applying for membership in the peer group; and

the member peer nodes of the peer group rejecting or accepting the peer node's group membership application using the membership service.

97. (Original) A method comprising:

a peer node discovering an instance of a service on one of a plurality of peer nodes, wherein the one of the plurality of peer nodes is local to a network location of the peer node on a network, wherein the plurality of peer nodes each host an instance of the same service;

the peer node accessing the instance of the service;

wherein said discovering and said accessing the instance of the service are performed in accordance with one or more peer-to-peer platform protocols;

the peer node moving from the network location to a different network location;

the peer node discovering a different instance of the service on a different one of the plurality of peer nodes, wherein the different one of the plurality of peer nodes is local to the different network location;

the peer node accessing the different instance of the service; and

wherein said discovering and accessing the different instance of the service are performed in accordance with the one or more peer-to-peer platform protocols.

98. (Original) The method as recited in claim 97, further comprising:

the peer node providing a unique identifier for the peer node to the different instance of the service, wherein the unique identifier distinguishes the peer node from the other peer nodes on the network; and

the different instance of the service recognizing the peer node using the unique identifier; and

the different instance of the service routing information to the peer node at the different network location.

99. (Original) A method comprising:

a peer node discovering an instance of a service on one of a plurality of peer nodes, wherein the one of the plurality of peer nodes is local to a network location of the peer node on a network, wherein the plurality of peer nodes each host an instance of the same service;

the peer node accessing the instance of the service;

wherein said discovering and said accessing the instance of the service are performed in accordance with one or more peer-to-peer platform protocols;

the peer node moving from the network location to a different network location;

the peer node discovering the same instance of the service on the one of the plurality of peer nodes;

the peer node accessing the instance of the service; and

wherein said discovering and accessing the same instance of the service are performed in accordance with the one or more peer-to-peer platform protocols;

the peer node providing a unique identifier for the peer node to the instance of the service, wherein the unique identifier distinguishes the peer node from the other peer nodes on the network;

the instance of the service recognizing the peer node using the unique identifier; and

the instance of the service routing information to the peer node at the different network location.

100. (Currently amended) A method comprising:

a peer node discovering an instance of a content on one of a plurality of peer nodes, wherein the one of the plurality of peer nodes is local to a network location of the peer node on a network, wherein the plurality of peer nodes each include an instance of the same content;

the peer node accessing the instance of the content;

wherein said discovering and accessing the instance of the content are performed in accordance with one or more peer-to-peer platform protocols;

the peer node moving from the network location to a different network location;

the peer node discovering a different instance of the content on a different one of the plurality of peer nodes, wherein the different one of the plurality of peer nodes is local to the different network location;

the peer node accessing the different instance of the content;

wherein said discovering and accessing the different instance of the content are performed in accordance with the one or more peer-to-peer platform protocols.

101. (Withdrawn) An article of manufacture comprising software instructions executable to implement:

a plurality of peer nodes coupled to a network each implementing a core layer of a peer-to-peer platform, wherein the core layer comprises one or more peer-to-peer platform protocols for enabling the plurality of peer nodes to discover each other, communicate with each other, and cooperate with

each other to form peer groups and share content in a peer-to-peer environment;

the plurality of peer nodes each implementing a service layer comprising one or more core services each provided by one or more of the plurality of peer nodes in the peer-to-peer environment, wherein each of the one or more core services are configured to be accessed by peer nodes in the peer-to-peer environment in accordance with at least a subset of the one or more peer-to-peer platform protocols;

the plurality of peer nodes each implementing an application layer comprising one or more applications each provided by one or more of the plurality of peer nodes in the peer-to-peer environment, wherein each of the one or more applications are configured to be accessed in accordance with at least one of the one or more peer-to-peer platform protocols, and wherein at least a subset of the one or more applications are each configured to access at least one of the one or more core services to perform application tasks in the peer-to-peer environment in accordance with at least one of the one or more peer-to-peer platform protocols; and

at least a subset of the plurality of peer nodes accessing at least a subset of the core services in accordance with at least one of the one or more peer-to-peer platform protocols to form one or more peer groups in the peer-to-peer environment.

102. (Withdrawn) The article of manufacture as recited in claim 101, wherein each of the one or more peer-to-peer platform protocols defines one or more advertisement formats for describing resources in the peer-to-peer environment, and wherein the software instructions are further executable to publish advertisements for the resources in the peer-to-peer environment, wherein the resources include one or more of the peer nodes, the peer groups, the content, the core services, other services in the

service layer, the applications, pipes, and pipe endpoints, wherein the pipes are communications channels between one or more of the peer nodes, the core services, the other services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

103. (Withdrawn) The article of manufacture as recited in claim 101, wherein at least a subset of the one or more peer-to-peer platform protocols defines one or more message formats configured for use in exchanging messages between the peer nodes in the peer-to-peer environment in accordance with the particular protocol.

104. (Withdrawn) The article of manufacture as recited in claim 101, wherein the one or more peer-to-peer platform protocols includes a peer discovery protocol for discovering resources in the peer-to-peer environment, wherein said discovering the resources returns one or more advertisements for the discovered resources formatted in accordance with the peer discovery protocol.

105. (Withdrawn) The article of manufacture as recited in claim 101, wherein the resources include one or more of the peer nodes, the peer groups, the content, the core services, other services in the service layer, the applications, pipes, and pipe endpoints, wherein the pipes are communications channels between one or more of the peer nodes, the core services, the other services and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

106. (Withdrawn) The article of manufacture as recited in claim 101, wherein the one or more peer-to-peer platform protocols includes a peer membership protocol for use by the peer nodes in applying for membership in one or more of the peer groups.

107. (Withdrawn) The article of manufacture as recited in claim 101, wherein the one or more peer-to-peer platform protocols includes a peer resolver protocol for use in

sending generic search queries from one peer node to one or more other peer nodes in the peer-to-peer environment.

108. (Withdrawn) The article of manufacture as recited in claim 101, wherein the one or more peer-to-peer platform protocols include a pipe binding protocol for use in finding the physical location of a pipe endpoint and in binding to the pipe endpoint.

109. (Withdrawn) The article of manufacture as recited in claim 101, wherein the one or more peer-to-peer platform protocols include an endpoint routing protocol for enabling the peer nodes to request peer routing information to reach other peer nodes in the peer-to-peer environment, wherein pipes are communications channels between one or more of the peer nodes, the core services, other services in the service layer, and the applications in the peer-to-peer environment, and wherein the pipe endpoints are network interfaces on the peer nodes that are configured to be bound to the pipes to establish the communications channels.

110. (Withdrawn) The article of manufacture as recited in claim 101, wherein the one or more peer-to-peer platform protocols includes a peer information protocol for enabling the peer nodes to obtain information about capabilities and status of other peer nodes in the peer-to-peer environment.

111. (Withdrawn) The article of manufacture as recited in claim 101, wherein each peer group is a collection of cooperating member peer nodes that provide a common set of services in the peer-to-peer environment.

112. (Withdrawn) The article of manufacture as recited in claim 111, wherein the one or more peer-to-peer platform protocols include a discovery protocol, wherein the common set of services includes a discovery service for use by member peer nodes in said peer group to discover advertised resources including the peer nodes and the peer groups in the peer-to-peer environment, wherein the discovery service is accessible in accordance with the discovery protocol.

113. (Withdrawn) The article of manufacture as recited in claim 111, wherein the one or more peer-to-peer platform protocols include a membership protocol, wherein the common set of services includes a membership service for use by member peer nodes in said peer group to reject or accept group membership applications, wherein the membership service is accessible in accordance with the membership protocol.

114. (Original)An article of manufacture comprising software instructions executable within a peer node to implement:

a peer node discovering an instance of a service on one of a plurality of peer nodes, wherein the one of the plurality of peer nodes is local to a network location of the peer node on a network, wherein the plurality of peer nodes each host an instance of the same service;

the peer node accessing the instance of the service;

wherein said discovering and said accessing the instance of the service are performed in accordance with one or more peer-to-peer platform protocols;

the peer node moving from the network location to a different network location;

the peer node discovering a different instance of the service on a different one of the plurality of peer nodes, wherein the different one of the plurality of peer nodes is local to the different network location;

the peer node accessing the different instance of the service; and

wherein said discovering and accessing the different instance of the service are performed in accordance with the one or more peer-to-peer platform protocols;

the peer node providing a unique identifier for the peer node to the different instance of the service, wherein the unique identifier distinguishes the peer node from the other peer nodes on the network; and

the different instance of the service recognizing the peer node using the unique identifier; and

the different instance of the service routing information to the peer node at the different network location.

115. (Original)An article of manufacture comprising software instructions executable within a peer node to implement:

a peer node discovering an instance of a service on one of a plurality of peer nodes, wherein the one of the plurality of peer nodes is local to a network location of the peer node on a network, wherein the plurality of peer nodes each host an instance of the same service;

the peer node accessing the instance of the service;

wherein said discovering and said accessing the instance of the service are performed in accordance with one or more peer-to-peer platform protocols;

the peer node moving from the network location to a different network location;

the peer node discovering the same instance of the service on the one of the plurality of peer nodes;

the peer node accessing the instance of the service; and

wherein said discovering and accessing the same instance of the service are performed in accordance with the one or more peer-to-peer platform protocols;

the peer node providing a unique identifier for the peer node to the instance of the service, wherein the unique identifier distinguishes the peer node from the other peer nodes on the network;

the instance of the service recognizing the peer node using the unique identifier; and

the instance of the service routing information to the peer node at the different network location.

116. (Currently amended) An article of manufacture comprising software instructions executable within a peer node to implement:

a peer node discovering an instance of a content on one of a plurality of peer nodes, wherein the one of the plurality of peer nodes is local to a network location of the peer node on a network, wherein the plurality of peer nodes each include an instance of the same content;

the peer node accessing the instance of the content;

wherein said discovering and accessing the instance of the content are performed in accordance with one or more peer-to-peer platform protocols;

the peer node moving from the network location to a different network location;

the peer node discovering a different instance of the content on a different one of the plurality of peer nodes, wherein the different one of the plurality of peer nodes is local to the different network location;

the peer node accessing the different instance of the content;

wherein said discovering and accessing the different instance of the content are performed in accordance with the one or more peer-to-peer platform protocols.